

Application Serial No. 08/845,897
Applicant(s): Imam et al.

PATENT APPLICATION
Docket No.: N.C. 77,897

REMARKS

Claims 1 through 22 presently appear in this case. Claims 5, 6, 8 through 10, and 12 through 16 have been withdrawn from consideration as drawn to a nonelected invention. No claims have been allowed. The Examiner has correctly observed that claim 11, not claim 12, reads on the elected species. The present claims are submitted to define patentable subject matter. Favorable reconsideration and allowance are respectfully urged.

Claims 1, 2, 4, 7, and 17 through 22 have been provisionally rejected under the judicially-created doctrine of obviousness-type double patenting, over claims 1 through 3 and 7 through 21 of USSN 08/846,192. A terminal disclaimer, along with evidence of common ownership, is enclosed. Upon acceptance of that terminal disclaimer, this rejection will have been obviated. Reconsideration and withdrawal of this rejection are respectfully urged.

Claim 18 has been rejected under 35 U.S.C. §112, second paragraph, as indefinite. Claim 18 has been revised as suggested by the Examiner. Accordingly, this rejection has been obviated. Reconsideration and withdrawal of this rejection are respectfully urged.

Claims 1 through 4, 11, 17, 19, and 22, have been rejected under 35 U.S.C. §102(b) as anticipated by Jarema et al '401. The Examiner states that Jarema et al. '401 discloses a metal foam, such as an Al or Al-alloy foam, having open cells, which is impregnated with an organic material, such as an epoxy. The Examiner adds that the metal foam can contain cells which are of equal sizes. This rejection is respectfully traversed.

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The present claims recite an open cell metal foam *impregnated* with a polymeric material. As shown by the enclosed page 669 of *The Random House College Dictionary*, Revised Edition 1982, definition 3, *impregnate* means "to cause to be infused or permeated throughout, as with a substance; saturate". Jarema et al. '401, contrary to the present invention, coats only the surface of, rather than impregnates, a metal foam. As shown by figure 1 of Jarema et al. '401, the coating of Jarema et al. '401 partly or completely fills only the open cavities that exist on the surface of any foam (col. 2, lines 45 through 48; Fig. 1 and the accompanying description at col. 2, lines 11 through 15). That is Jarema et al. '401 is merely a surface treatment that deposits a polymer on only the surface of the foam. In Jarema et al. '401, penetration of the polymer into the interior of the metal foam, as required by the term "impregnation" in the present claims, never occurs.

When read in the context of its preceding sentences, col. 3, lines 50 through 52, of Jarema et al. '401 is consistent with Jarema et al. '401 describing only a surface coating procedure, without the impregnation of the foam recited in the present claims. Col. 3, lines 45 through 52, of Jarema et al. '401 state:

Thus, the foamed metal can be first treated with a resinous material which seeps into the cavities *on the surface*". More particularly this first coat can, for example, be applied as a liquid such as a solution of a polymer in an organic solvent. Afterwards, the solvent--which facilitates seepage into the pores of the metal foam--is then allowed to evaporate, leaving the polymer coat on the foam.

(Emphasis added.) Clearly then, the "seepage into the pores of the metal foam" described in the last sentence of the above quote refers merely to seepage of the resin into only the cavities on the surface

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of the foam, as described in the first sentence of the above quote. That interpretation is reinforced by col. 2, lines 11 through 15 of Jarema et al. '401, which in describing Fig. 1, state: "As illustrated, the plastic layer extends into the cavities *in the coated surface*. This invention covers surfaces having cavities which are partially filled, substantially filled, or entirely filled" (*emphasis added*). In other words, the surface coating of Jarema et al. '401 simply fills in cavities on the upper surface of a closed cell foam, much like a wax coating on a pitted surface. Nothing in Jarema et al. '401 discloses or suggests impregnation of a metal foam.

Also, nothing in Jarema et al. '401 discloses or suggests that the metal foam they coat has the open-cell structure recited in the present claims. The enclosed page 566 of the *Encyclopedia of Polymer Science and Engineering*, Vol. 3, John Wiley & Sons, Inc., New York (1985) states that an open-cell foam is a foam having "a large fraction of open cells". Figures 1 through 3 of Jarema et al. '401 do not suggest that their coated foams have a large fraction of open cells. If anything, figures 1 through 3 of Jarema et al. '401 suggest that their foam has a large fraction of closed cells and is therefore a closed cell foam (*see the enclosed page 566 of the Encyclopedia of Polymer Science and Engineering, id.*, for the definition of a closed cell foam).

Nor do the metal foam patents referenced by Jarema et al. '401 (col. 1, lines 30 through 39) disclose or suggest that Jarema et al. '401 describes treatment of open-cell foams. Col. 3, lines 51 through 53 of Hardy et al. '326 state that their objective is "to provide a method of producing a ... metal having a plurality of closed cells." Hardy et al. '326 (col. 5, lines 25 through 30) then describes their metal foams as including "a plurality of discrete *closed cells, some possibly being*

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interconnected" Fiedler '819 describes making a metal alloy foam by the addition of a hydride-containing metal powder to a molten metal (col. 2, lines 16 through 26).¹

Moreover, Fig. 2 of Jarema et al. '401 fails to show gradation of pore sizes in any direction along the foam, as recited in the present claims. As shown in Fig. 2, the upper pores of the surface of the foamed metal are at least as large as those shown in the middle and bottom sections of the foam. The illusion that Fig. 2 shows gradation of pore sizes with thickness arises is possible only if one improperly discounts the pore sizes at the top and bottom surfaces of the foam. If the pore sizes shown at the top and bottom surfaces of the foamed metal are taken into account, the pore size distribution in Fig. 2 is random. Reconsideration and withdrawal of this rejection are respectfully traversed.

Claim 20 has been rejected under 35 U.S.C. §103(a) as obvious from Jarema et al. '401. The Examiner states that while Jarema et al. '401 does not specifically disclose a laminate comprising a plurality of sheets according to claim 19, they do disclose laminating additional material onto the metal foam sheet. This rejection is respectfully traversed.

¹The final product of Fiedler, a foamed nickel catalyst formed by leaching the aluminum out of the previously formed metal alloy foam intermediate, is clearly not the metal foam the Jarema et al. '401 proposes coating. Coating the foamed nickel catalyst of Fiedler would certainly destroy that foam's ability to act as a catalyst in the manner intended by Fiedler. Nothing in the art of record suggests any motivation for providing a polymer coating upon the surface of the Fiedler foamed nickel catalyst. Rather, Jarema et al. '401 simply uses the aluminum-nickel alloy foam intermediate of Fiedler as an example of a metal foam produced by the addition of a gas-forming compound, such as a metal hydride, to a molten metal.

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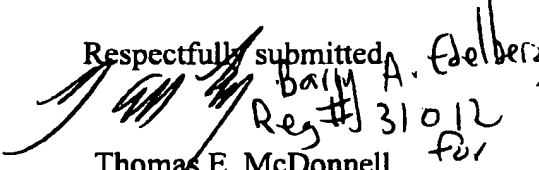
As stated above with regard to the rejection of claims 1 through 4, 11, 17, 19, and 22 under 35 U.S.C. §102(b) as anticipated by Jarema et al '401, Jarema et al. '401 discloses only a surface coating upon a closed cell foam. Jarema et al. '401's multiple coatings are merely coatings layered upon the surface of a closed cell metal foam. They do not impregnate an open cell metal foam as recited by the present claims. Additionally, for greater clarity, claim 20 has been revised to recite a stack of sheets bonded together (page 12, lines 12 through 17 of the specification as filed). Reconsideration and withdrawal of this rejection are respectfully urged.

In conclusion, the present claims are submitted to fully comply with 35 U.S.C. §112 and to define patentable subject matter. Favorable reconsideration and allowance are earnestly solicited.

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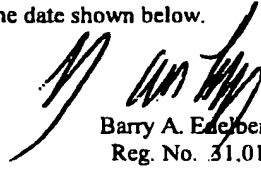
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CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that this paper is being transmitted to the Patent and Trademark Office on the date shown below.


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December 4, 1998